

SAFETY BULLETIN



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Failures in Backup Power Supply Increases Potential Severity of Multiple Incidents

In the past 12 months, several incidents have been reported which had the potential for being more serious due to the inoperability of the back-up power supplies. These incidents involved the loss of systems that alert crews to danger; failed emergency power supplies to living quarters and control systems during a loss of primary power; and a ruptured battery in a storage box designed to provide power to critical systems and components. In all cases, the impact of an incident had the potential for escalating into something more serious due to inadequate inspection and maintenance of back-up batteries and Uninterrupted Power Supply (UPS) systems.



Figure 1: Typical Battery Bank

Reported Incidents:

- **DAMAGED/RUPTURED BATTERY INSIDE BATTERY STORAGE BOX UNDETECTED**

On July 23, 2016, field electricians discovered a ruptured 12-volt battery. The ruptured battery was inside a battery storage box that was associated with a turbine generator that had been “out-of-service” since 2011.

- The ruptured battery could have been discovered earlier or the rupture could have possibly been prevented with better inspection and maintenance practices for long-term out-of-service equipment.

- **NO EMERGENCY POWER PROVIDED TO THE LIVING QUARTERS AND CONTROL SYSTEMS**

On January 27, 2017, during a planned regulatory shutdown, an Emergency Shutdown System (ESS) experienced a shutdown of various systems, including

primary power. During the event, emergency power was not provided to the living quarters and control systems.

- It was determined that one of several contributing factors was a defective cell in a series of 120 battery cells, which rendered the UPS inoperable.

- **ALARMS AND PA SYSTEM FAILED TO ALERT**

On April 6, 2017, a production platform went into emergency shutdown (ESD) mode and de-energized the main gas generators. During re-start operations, the platform mechanic heard a noise, discovered a fire in the main gas generator room, and immediately shut the generator down and extinguished the fire. During this episode, because the facility had an active ESD, the alarms did not sound and the PA system, which was needed to alert the crew, was found to be inoperable.

- The immediate cause of the PA system failure was determined to be discharged back-up batteries that had not been previously detected.

Therefore, BSEE recommends:

- Operators should immediately ensure that backup systems for critical components are operable and fit for service. Assessments of system integrity should include inspections of the entire system, including back-up components.
- Operators should conduct an inventory of all back-up systems e.g., batteries and UPS systems, and their respective system/primary components to ensure that critical systems are monitored, maintained and serviced in their entirety.
- Operators should consider developing and implementing a preventative maintenance and inspection program for back-up systems and equipment such as batteries and recharging systems, including those supporting critical equipment rendered “out-of -service”.
- Operators should regularly test the backup systems to critical safety systems and components. Procedures to inspect and test all components and the systems should be followed in accordance with the manufacturer’s recommendation and/or internal guidelines.
- Operators should consider installing and maintaining batteries in accordance with API RP 14F Section 10.3 (5th edition) and API RP 14FZ Section 10.3 (1st edition)

-- BSEE --

A **Safety Bulletin** is a tool used by BSEE to share lessons learned from an incident or near miss. It also contains recommendations that should help prevent the recurrence of such an incident on the Outer Continental Shelf.